

Installation and User Manual

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Intended Use

The electric hot water device ELWA is designed to be used with photovoltaic arrays up to 2.5kWp nominal power.

ELWA should be mounted on conventional hot water tanks or storage tanks with a minimum capacity of about 150 liters.

The device does not feed any power to the grid. A Permission of the grid operator or the utility is NOT required.

Any use different from that described above may lead to damage and can even cause short circuits, electric shocks or fire. Safety instructions of this manual must be followed strictly!

The device fulfills national and European regulations. Company and product name are trademarks of my-PV GmbH. All rights reserved.

Scope of Supply

- Photovoltaic Water Heater ELWA
- O-Ring-Seal
- 1 set MC4 Connectors
- User Manual

Safety Instructions

Always comply with local regulations for mounting and connection.

Any damage caused by ignoring the installation and user manual is not covered by the manufacturer's warranty.

Permanent equipotential bonding of the device and the storage tank is mandatory.

Never switch on the device if the heating rod is not fully immersed.

The device is intended for use in a dry environment, the enclosure must not get wet or moist. Danger of electric shock!

Never use the device where ammonia is present.

Never use the device in a dusty environment.

Never cover the ventilation holes of the enclosure.

Always mind the mounting position: heating rod horizontal, power cord bottom

Avoid high (>40°C) and low (<5°C) ambient temperatures during storage and operation of the device. Avoid direct sunlight.

Never exceed the maximum DC input voltage (360V).

The thermal fuse blows at 98 +/-3°C and deactivates the device permanently.

AC supply must be fused 10 to 16A.

In commercial facilities electrical installations have to comply with all local regulations.

Exemption of Warranty and Liability

Any warranty or liability is exempted for:

- Injury to persons and/or damage to property caused by unintended use or in disregard of safety- and user instructions
- Consequential damage
- Unauthorized modification, disassembling or other conversion of the device
- Defects caused by lime scale deposits on the heating rod.

Mounting and Installation Instructions

The installation of the device must only be carried out by authorized technical staff.

The storage tank must be drained properly.

ELWA is intended for horizontal mounting in hot water or storage tanks with 1 ½ inch standard female threads.

The unheated section of the heating rod is 100mm from sealing face, the length of the thread pipe must not exceed 90mm.

Use the O-ring seal supplied. Do not use any grease or lubrication agents. The plastic thread must not be sealed with the help of hemp or other sealing material.

Do not apply force when screwing in the entire device until the seal is slightly pressed. Make sure that the O-ring is properly placed in its groove. Then tighten the heating rod with a 60mm spanner. Never exceed a torque of 80 Nm.



Never tighten the heating rod by turning the metal case of the device!

If the device is not upright (power cord bottom) after the thread has been tightened, it can be turned gently left or right.

Declaration of Conformity

my PV GmbH, Stutterheimstrasse 16-18/2, 1150 Vienna
hereby declares that the device



ELWA

complies with the following standards and regulations:

EN 60335-1

EN61000-6-2, EN61000-6-3

EN 61000-3-2

EN 60730-2-9

The above mentioned company holds documentation to proof the compliance with safety requirements.



Vienna, 2015-01-02

Ing. Dieter Greger-Dutzi, Managing Director

Technical Data

DC

DC-voltage	100 - 360 V (max.)
MPP-range	150 - 360 V

Number of MPP trackers	1
Max. input current	10 A, internally limited
Nominal power	2,000 W at 25°C ambient temperature, derating at overheat
DC inputs	Original MC4, 1 string
PV panel configuration	6 - 8 pcs 60 cells polycrystalline
MPP- efficiency	99,8 %

General Data

Operating pressure	max. 10 bar (1MPa)
Overall efficiency	>99% at nominal power
Protection class	IP20
Operating temperature range	5 °C to 40 °C
Operating display	3 LED's
Interface	Serial IR Interface
Dimensions (WxHxD)	130 x 180 x 600 mm incl. heating rod
Heating rod length	45 cm
Heating rod thread	1 ½ inch
Weight	2 kg with power cord, without carton

AC

Heating power	1.675 W
Power connection	Single phase, grounded plug, 230 V, 50-60 Hz
Recommended fuse	10 – 16 A
Power cord	3 m
Standby-power consumption	0 W at DC operation, <2 W at AC operation

Subject to change without notice.

Stratification Charge

ELWA is factory preset to operate as a single device or as an upper device in stratification charge mode.

The lower ELWA has to be set as follows:

1. Switch off main switch
2. Adjust rotary knob to „spanner“ position
3. Switch on main switch ▶ all 3 LEDs flash (Setup Mode)
4. Adjust rotary knob to  position
▶ LEDs run from top to bottom
5. Switch off main switch ▶ Setting is stored
6. Set rotary knob to desired solar target temperature
7. Switch on main switch ▶ Device is in standby mode (green LED flashing) until activated by upper device

Remark: Setting can be changed to “Upper mode” by following the above procedure by setting to  symbol.

Error Displays

The red LED indicates different error conditions by flashing:

- 1x flash ▶ Over temperature fuse blown (98°C). Call your installer for service.
- 2x flash ▶ Water temperature above 90°C. Device stops and will restart heating when the temperature has fallen.
Note: The water temperature is close to the over temperature fuse threshold (98°C). If the water has been heated by external heat sources, adjust the maximum temperature threshold of this source to 90°C.
- 3x flash ▶ Electronic circuit over temperature. Device switches off and restarts after cool-down.
- 4x flash ▶ Error of the electronic circuit or the heating rod. Call your installer for service.
- 5x flash ▶ DC isolation fault (either solar array or heating rod). Call your installer for service.
- 6x flash ▶ Temperature sensor fault. Call your installer for service.

Service

Use in hard water can lead to lime scale deposition at the heating rod especially if the target temperature is set above 60°C. We recommend an annual check. Dismantle device from storage tank and remove lime deposition. Never scratch the heating rod surface (corrosion might arise).

Troubleshooting

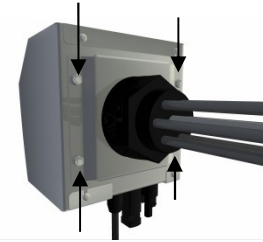
The device does not contain any user serviceable parts. Call your installer for service.

Disposal



Keep packaging box or dispose properly.
Dispose the device according to legal regulations at the end of lifetime.

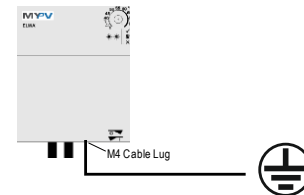
Then tighten the 4 lock nuts to fix the device:



Make sure that the heating rod is fully immersed when filling the water tank. Check for leakage.

Electrical Connection

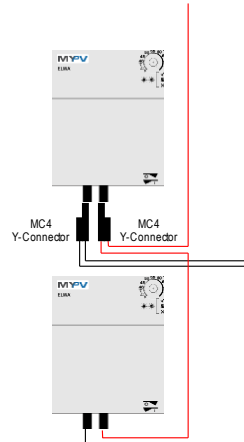
1. Earth (ground) the storage tank according to local regulations.
2. Connect Earth (ground) wire to the grounding screw of the device with a minimum wire section of 1.5mm² (AWG15). Test the ground conductor resistance according to the local regulations (Protection Class 1):



3. Make sure that the device is switched off.
4. Connect MC4 DC wires with correct polarity. Wrong polarity does not cause any damage, but the device will not work.
5. Connect AC plug if AC heating is desired.

⚠ Electrical Connection Stratification Charge

1. Earth (ground) the storage tank according to local regulations.
2. Connect Earth (ground) wire to the grounding screws of both devices with a minimum wire section of 1.5mm² (AWG15). Test the ground conductor resistance according to the local regulations (Protection Class 1) (see above).
3. Make sure that both devices are switched off.
4. Connect DC wires as shown below:



Both ELWAs are connected in parallel!
MC4 Y-connectors not supplied.

5. Connect MC4 DC wires with correct polarity. Wrong polarity does not cause any damage, but the device will not work.
6. Connect AC plug of the **upper** ELWA if AC heating is desired.

Controls and Indicators



Main switch



Rotary knob and indicators

Rotary knob for temperature adjustment

LED green Target temperature reached (flashes at Standby)

LED yellow Normal operation (flashes if AC powered)

LED red Error

Operating Status Indicator



Startup (~ 7 sec)



Standby



Heating from DC



Heating from AC



Heating finished, target temperature reached



Setup Mode
(see p 5,6)



Error
(see p 6)

Legend:

● LED on

⊙ LED flashing

■ LED off

Start-up

Normal operation without AC reheating (AC plug not connected)

Remark: It takes several minutes to start-up ELWA after connecting the DC. The green LED flashes (Standby).

1. Adjust desired solar target temperature
2. Switch on main switch (Device starts operating several minutes after the DC has been connected and solar power is available)
3. Device returns to normal operation ► LED yellow on
4. If target temperature reached ► Device switches off, LED yellow off, LED green on

Normal operation with AC reheating (AC plug connected)

AC reheating ensures reaching the AC target temperature in the afternoon independently of sun power.

AC target temperature is factory preset to 50°C. See next chapter to change.

The next AC reheat cycle starts in the afternoon of the next day. If a manual reheat is required (e.g. in the evening), simply switch the device off and on again. This activates the AC reheat cycle.

Remark: If you first connect DC it takes several minutes to start-up the device (LED green flashing)

1. Set rotary knob to desired solar target temperature
2. Switch on main switch
3. Device returns to normal operation ► LED yellow on if solar powered, LED yellow flashes if AC powered
4. If target temperature reached ► Device switches off, LED yellow off, LED green on

Adjusting the AC reheat target temperature (factory preset to 50 °C)

1. Switch off main switch
2. Adjust rotary knob to „spanner“ position
3. Switch on main switch ► all 3 LEDs flash (Setup Mode)
4. Set rotary knob to desired reheat temperature ► LEDs flash alternately red/green and yellow
5. Switch off main switch ► reheat temperature is stored
6. Set rotary knob to desired solar target temperature
7. Switch on main switch ► Device returns to normal operation